

Kendra Bergeron – Online Learning Experience (OLE) Planning Grid - ITEC 7480 & 7481

Curriculum Standard (applicable to k12 only): GPS Geometry Standards – 10th grade mathematics

MM2G2. Students will define and apply sine, cosine, and tangent ratios to right triangles.

- a. Discover the relationship of the trigonometric ratios for similar triangles.
- b. Explain the relationship between the trigonometric ratios of complementary angles.
- c. Solve application problems using the trigonometric ratios.

Student Objectives/Outcomes:	Bloom's Level:	Activities:	Assessments:
1. Students will identify and use the properties of similar triangles to solve problems and then justify by explaining their solutions.	Evaluating	<p>Before Day of Lesson</p> <ul style="list-style-type: none"> Floodlights Activity sheet – students work individually a day or two ahead of time <p>Days during Lesson – Teacher never gives out the answer, students are to come up with it on their own.</p> <ul style="list-style-type: none"> Students work individually again using teacher feedback written on each sheet to improve their solution. In pairs or threes, students will justify and explain their decisions to peers. Groups are given examples of other students' work on the task (given by teacher) in which they must critique. In a whole-class discussion, students explain and compare the alternative approaches they have seen and used. After the assessment the teacher can discuss the correct answer and have students reflect on their errors to develop a deep understanding. 	<ul style="list-style-type: none"> Students are given a clean Floodlights Activity sheet and asked to work individually to reflect on their solutions to the task.
2. Students will analyzing and prove concepts of congruency and similarity, including identifying corresponding sides and corresponding angles among triangles	Discovering	<p>Before Day of Lesson</p> <ul style="list-style-type: none"> Finding Congruent Triangles Activity sheet – students work individually a day or two ahead of time <p>Days during Lesson – Teacher never gives out the answer, students are to come up with it on their own.</p> <ul style="list-style-type: none"> Begin with a whole-class discussion establishing conditions for congruency from triangle properties Students work alone first to decide on the truth of a conjecture about congruency conditions for triangles In pairs chosen by the teacher (pair same level with same level) students work to share their ideas and produce and justify a joint response. Same pairs students will analyze sample responses given by teacher. In a whole-class discussion, students develop their understanding of proof in this context. After the assessment the teacher can discuss the correct answer and have students reflect on their errors to develop a deep understanding. 	<ul style="list-style-type: none"> Students are asked to individually complete another Finding Congruent Triangles activity sheet which the teacher will asses.

3. Student will be able to define trigonometric ratios and solve problems involving right triangles.	Understanding	<ul style="list-style-type: none"> Students will individually work on the Hopewell Geometry task. In small groups of 2 or 3, students will analyze the unscored student work given to each group by the teacher. Once the groups have a better understand of the material they will critique the scored student work given to each group by the teacher. Do they agree with the scores or do they not agree? In a whole-class discussion, students will give their responses to the scored student work. After the assessment the teacher can discuss the correct answer and have students reflect on their errors to develop a deep understanding. 	<ul style="list-style-type: none"> Students are given a clean activity sheet and asked to individually complete it as the teacher will asses it.
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MM2G3. Students will understand the properties of circles.

- Understand and use properties of chords, tangents, and secants as an application of triangle similarity.
- Understand and use properties of central, inscribed, and related angles.
- Use the properties of circles to solve problems involving the length of an arc and the area of a sector.
- Justify measurements and relationships in circles using geometric and algebraic properties.

Student Objectives/Outcomes:	Bloom's Level:	Activities:	Assessments:
1. Students will understand and use properties of circles as an application of triangle similarity.	Applying	Before Day of Lesson <ul style="list-style-type: none"> Geometry Problems: Circles and Triangles activity sheet – students work individually a day or two ahead of time Days during Lesson – Teacher never gives out the answer, students are to come up with it on their own. <ul style="list-style-type: none"> Students work individually again using teacher feedback written on each sheet to improve their solution. In pairs or threes, students work collaboratively in small groups to produce an improved solution to the same problem. Groups are given examples of other students' work on the task (given by teacher) in which they must critique. In a whole-class discussion, students explain and compare the alternative approaches they have seen and used. After the assessment the teacher can discuss the correct answer and have students reflect on their errors to develop a deep understanding. 	<ul style="list-style-type: none"> Students are given a clean Geometry Problems: Circles and Triangles activity sheet and asked to work individually to reflect on their solutions to the task with the teacher will assess.
2. Students will understand and apply theorems about circles.	Creating	Classroom within a Classroom <ul style="list-style-type: none"> The teacher will divide the classroom in half. One side getting the higher level task and the other getting the mid level. Teacher will choose the groups and assign either of two tasks: <ol style="list-style-type: none"> Circles in Triangles – Higher Level Temple Geometry – Middle Level All students will follow the same directions to complete their activity. 	<ul style="list-style-type: none"> Students will be assessed on their presentations as they present them to the class.

		<ul style="list-style-type: none"> Students will individually work on their task first. In their groups students will analyze the unscored student work given to each group by the teacher. Once the groups have a better understand of the material they will critique the scored student work given to each group by the teacher. Do they agree with the scores or do they not agree? In each half-class discussion, students will give their responses to the scored student work. Students will create a presentation to explain their task to the other half of the classroom. 	
3. Students will evaluate relationships between radii of inscribed and circumscribed circles of right triangles.	Evaluate	<p>Before Day of Lesson</p> <ul style="list-style-type: none"> Inscribing and circumscribing Right Triangles activity sheet – students work individually a day or two ahead of time <p>Days during Lesson – Teacher never gives out the answer, students are to come up with it on their own.</p> <ul style="list-style-type: none"> Students work individually again using teacher feedback written on each sheet to improve their solution. In pairs or threes, students work collaboratively in small groups to produce an improved solution to the same problem. Groups are given examples of other students' work on the task (given by teacher) in which they must critique. In a whole-class discussion, students explain and compare the alternative approaches they have seen and used. After the assessment the teacher can discuss the correct answer and have students reflect on their errors to develop a deep understanding. 	<ul style="list-style-type: none"> Students are asked to individually complete another Inscribing and Circumscribing Right Triangles activity sheet which the teacher will asses.
4. Students will solve problems involving area and arc length of a sector of a circle.	Applying	<p>Before Day of Lesson</p> <ul style="list-style-type: none"> Sectors of Circles activity sheet – students work individually a day or two ahead of time <p>Days during Lesson – Teacher never gives out the answer, students are to come up with it on their own.</p> <ul style="list-style-type: none"> In pairs or threes, students work together to match cards according to the arc length, area, or perimeter of the sectors. In a whole-class discussion, students consider the results of changing the radius and/or sector angle of a sector. After the assessment the teacher can discuss the correct answer and have students reflect on their errors to develop a deep understanding. 	<ul style="list-style-type: none"> Students are asked to individually complete another Sectors of Circles activity sheet which the teacher will asses.
5. Students will justify relationship and measurements in circles.	Understanding	<ul style="list-style-type: none"> Students will individually work on the Circle Pattern task. In small groups of 2 or 3, students will analyze the unscored student work given to each group by the teacher. Once the groups have a better understand of the material they will critique the scored student work given to each group by the teacher. Do they agree with the scores or do they not agree? In a whole-class discussion, students will give their responses to the scored student work. After the assessment the teacher can discuss the correct answer and have students reflect on their errors to develop a deep understanding. 	<ul style="list-style-type: none"> Students are given a clean activity sheet and asked to individually complete it as the teacher will asses it.

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MM2G4. Students will find and compare the measures of spheres.

- a. Use and apply surface area and volume of a sphere.
- b. Determine the effect on surface area and volume of changing the radius or diameter of a sphere.

Student Objectives/Outcomes:	Bloom's Level:	Activities:	Assessments:
1. Students will apply their knowledge of surface area and volume of spheres.	Applying	<p>Classroom within a Classroom</p> <ul style="list-style-type: none"> - The teacher will divide the classroom in half. One side getting the higher level task and the other getting the mid level. - Teacher will choose the groups and assign either of two tasks: <ol style="list-style-type: none"> 1. Fearless Frames – Higher Level 2. Glasses – Middle Level - All students will follow the same directions to complete their activity. <ul style="list-style-type: none"> • Students will individually work on their task first. • In their groups students will analyze the unscored student work given to each group by the teacher. • Once the groups have a better understand of the material they will critique the scored student work given to each group by the teacher. Do they agree with the scores or do they not agree? • In each half-class discussion, students will give their responses to the scored student work. • Students will create a presentation to explain their task to the other half of the classroom. 	<ul style="list-style-type: none"> • Students will be assessed on their presentations as they present them to the class.
<p align="center">Best size Cans Fun size Cans</p> <p>2. Students will explain volume formulas as real world problems.</p>	Evaluate	<p>Expert Teachers</p> <ul style="list-style-type: none"> - The students will teach each other the activities. - The teacher will choose the groups of 4 trying to have 2 higher level students and 2 mid to lower level students. - Teacher will assign a student a task based on ability. One to each person in the group. They will receive either: <ol style="list-style-type: none"> 1. Fearless Frames – Higher Level 2. Glasses – Middle Level - All students will follow the same directions to complete their activity. <ul style="list-style-type: none"> • Students will individually work on their task first. • Within the small groups the students will pair with the peer that has the same activity to produce an improved solution to their task. • Once both activities are completed in a group, they will then take turns teaching their task to one another. • In a whole-class discussion, students will share their solutions to their tasks. 	<ul style="list-style-type: none"> • Students will be graded on the activity they did not complete the first time around. Whichever activity was taught to them by their group peers.